

**BUREAU OF ENVIRONMENTAL REMEDIATION/REMEDIAL SECTION
GUIDELINE
SCOPE OF WORK
FOR A
REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDY (FS)**

BER POLICY#BER-RS-025

DATE: 1991

Revised 1996

Revised 2001

Revised 2005

PAGES: 7

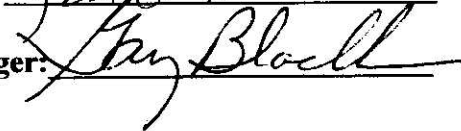
Section Chief:



Date:

12/28/05

Bureau Manager:



Date:

12/30/05

REVISIONS

Reviser: Kurt Limesand

Date of Revision: 2005

Reviser: Rob Elder

Date of Revision: 2001

Reviser: Rob Elder

Date of Revision: 1996

ORIGINATOR

Originator: Rachel Miller

Date: 1991

**BUREAU OF ENVIRONMENTAL REMEDIATION/REMEDIAL SECTION
GUIDELINE
SCOPE OF WORK
FOR A
REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDY (FS)**

BER POLICY#BER-RS-025

DATE: 1991

Revised 1996

Revised 2001

Revised 2005

PAGES: 6

GENERAL:

All work conducted under a Remedial Investigation/Feasibility Study (RI/FS) Scope of Work (SOW) shall be consistent with § 300.430 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR 300 (final rule promulgated 3/8/90), as provided by relevant portions of §§ 101-121 of the Comprehensive Environmental Response, Compensation and Liability Act as amended by the Superfund Amendments and Reauthorization Act of 1986. All work performed pursuant to a RI/FS Consent Agreement shall also follow all pertinent EPA and KDHE RI/FS guidance. This RI/FS Scope of Work (SOW) identifies the general activities that Respondent(s) are required to perform to complete a RI/FS. All work performed pursuant to a RI/FS SOW shall follow the Implementation Schedule and all procedures approved in the final RI/FS Work Plan.

SCOPING:

The Respondent shall meet with KDHE as necessary to address the scope of RI/FS activities. The RI/FS scoping should include the following items as appropriate: 1) assemble and evaluate the existing data for the site, including the results of any prior investigations or activities (removal actions, pertinent site assessments, or other investigations); 2) develop a conceptual understanding of the site based on the information described in the above item; 3) identify likely response scenarios, potentially applicable technologies, and operable units/source control actions that may address site problems; 4) undertake limited data collection efforts or studies (if necessary or appropriate) to assist in scoping RI/FS response actions or accelerating response actions, and to identify the initial need for treatability studies as appropriate; 5) identify the type, quality, and quantity of data that will be collected during the RI/FS to support decisions regarding remedial response activities; 6) identify relevant deliverables for the RI/FS process; 7) initiate the identification of potential applicable or relevant and appropriate requirements (ARARs) for actions at the site; and 8) discuss the development of appropriate community relation activities as determined by the KDHE Project Manager. Information gathered and discussed during these meetings should be used to assist in the development of a RI/FS Work Plan.

PURPOSE OF RI:

The purpose of the Remedial Investigation (RI) is to collect data necessary to adequately characterize the site for the purpose of developing and evaluating remedial alternatives. Field investigations should be conducted as necessary to provide sufficient data to characterize the site and to assess the risks to human health and the environment as well as support the development, evaluation, and selection of appropriate response alternatives. Site characterization may be conducted in one or more phases to focus sampling efforts and increase the efficiency of the RI. The primary objectives of the RI are described as follows:

- 1) Identify and characterize all significant source areas/operable units to the extent necessary to evaluate risk and determine appropriate remedial goals (i.e. identifying all contaminants of concern, determining the mechanism of the release(s), estimating the quantities of release(s), and determining whether the release(s) are active (ongoing) or inactive). Site characterization activities should be fully integrated with the development and evaluation of alternatives in the Feasibility Study (FS). The contribution of each source area/operable unit to the general site contamination should be evaluated in the RI/FS.
- 2) The nature, threat, and full lateral and vertical extent of the hazardous substances, hazardous materials, and other pollutants present at the site must be characterized for the purpose of (and to the extent necessary for) developing and evaluating effective remedial alternatives and evaluating risk. Characterization of the physical environmental setting shall be conducted during the RI. Characterization shall include evaluation of regional and local geology, hydrogeology and hydrology, particularly as they pertain to contaminant transport and fate mechanisms and/or remedial design alternatives. The chemical and physical properties of the contaminants, their mobility and persistence in the environment and their important fate and transport mechanisms shall be characterized during the RI. Any human and environmental targets that are threatened or affected by contamination must be identified.
- 3) All data necessary to assess the extent to which releases of hazardous substances at the site pose a threat to human health and the environment must be gathered during the RI. A risk assessment of contaminant impacts on identified target areas must be completed consistent with EPA and KDHE guidance and policy.
- 4) Data supporting the evaluation and design, if appropriate, of potential response actions shall be gathered during the RI. The need for Interim Remedial Actions to address identified "hot spots" or active contaminant source areas should be assessed, where appropriate. Bench- or pilot-scale treatability studies shall be conducted, when appropriate and practicable, to provide additional data for the

detailed analysis of remedial alternatives in the FS and to support engineering design of remedial alternatives.

PURPOSE OF THE FS:

The purpose of the Feasibility Study (FS) is to ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to allow the selection of the appropriate remedy(ies) by KDHE. The primary objectives of the FS are described as follows:

- 1) Identify and evaluate all appropriate remedial alternatives based on site characterization information obtained during the RI. The number of alternatives to be reviewed is highly site-specific and should be determined by the KDHE Project Manager in consultation with Respondent(s). Remedial action objectives (RAOs) shall be developed utilizing the results of site-specific risk assessments performed during the RI and should include discussion of the contaminants and media of concern, potential exposure pathways, and remediation goals. All applicable or relevant and appropriate requirements (ARARs) should be determined in the FS, if not previously determined in the RI.
- 2) Screen and assemble appropriate technologies into remedial action alternatives. Alternatives shall be developed that protect human health and the environment and meet remedial action objectives for the site.
- 3) Evaluate and refine alternatives based on the nine criteria as described in 40 CFR § 300.430 (e)(9)(iii) of the NCP. Relevant EPA guidance documents should be utilized as necessary in developing and evaluating remedial alternatives.
- 4) Conduct treatability studies or pilot tests as necessary and appropriate to support the effectiveness of certain alternatives.
- 5) Recommend the most feasible and effective remedial action for the site based on the nine criteria for evaluating remedial alternatives enumerated in 40 CFR § 300.430(e)(9)(iii) of the NCP.

RI/FS WORK PLAN:

As provided in the Consent Agreement, Respondents shall submit for review and final approval a RI/FS Work Plan. The Final RI/FS Work Plan shall address all KDHE comments received from review of prior work plan drafts. Respondent shall implement the RI/FS according to the implementation schedule contained in the Final KDHE-approved RI/FS Work Plan. The Final RI/FS Work Plan must include (physically or by reference) the following site-specific supporting documents: a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP), (commonly referred to jointly as a site Sampling and Analysis Plan (SAP)), and a Health and Safety Plan (HASP). A quality assurance project plan describes the policy, organization, functional activities, and quality assurance and quality control protocols necessary to achieve the data quality objectives dictated by the intended use of the data. A field sampling plan provides

the guidance for all field work by defining in detail the sampling and data-gathering methods to be used on a project. The field sampling plan should be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. A health and safety plan prepared to support the field effort must conform to the firm's or agency's health and safety program that must, in turn, be in compliance with requirements of the Occupational Safety and Health Administration.

IMPLEMENTATION:

Within 30 days from the date of KDHE approval of the Final RI/FS Work Plan, including the FSP, QAPP, and HASP, Respondents shall commence the schedule of work and implement the tasks detailed in the RI/FS Work Plan according to the KDHE-approved schedule. All work performed shall be consistent with activities and procedures proposed in the KDHE-approved Work Plan and consistent with the NCP and appropriate EPA and KDHE policies and guidance documents.

DELIVERABLES:

The general activities and subsequent deliverables that the Respondent(s) are required to complete are specified in 40 CFR § 300.430 of the NCP and are explained in the U.S. EPA document titled, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA". The Implementation Schedule (contained in the approved Work Plan) shall provide the schedule for deliverable submissions, field work, document revisions, etc.

RI REPORT:

Upon completion of all RI field activities necessary to achieve the objectives of the RI Scope of Work, a RI Report must be submitted to KDHE for review and approval in a time frame consistent with the implementation schedule in the Final RI Work Plan. The RI Report shall follow appropriate EPA guidance documents, and shall include all information and data collected during the RI investigation and shall describe in detail the work performed to accomplish the objectives set forth in this SOW. The RI Report shall include appropriate tables, figures, well logs, laboratory analytical data, references, appendices etc. to clearly portray the data generated during the investigation and to support any conclusions drawn in the RI Report. A discussion of any deviations from the KDHE-approved Work Plan shall be included in the Report. KDHE will review the Draft RI Report and submit comments to the Respondent(s). All comments must be addressed to KDHE's satisfaction prior to approval of the RI Report as Final. Upon KDHE approval of the Final RI Report, Respondent shall commence FS activities consistent with the KDHE-approved RI/FS Work Plan and implementation schedule.

BASELINE RISK ASSESSMENT:

A quantitative Baseline Risk Assessment (BRA) should be completed during the RI/FS process. Information and environmental data collected and validated as representative of site conditions will be used to quantitatively describe the potential excess human health risk and/or ecological risk posed by the site in the absence of remediation. This Risk Assessment process is used to characterize the risk posed to human health or the environment by environmental conditions at a

contaminated site. The Respondent(s) may, at their option, perform such risk assessment for submittal to KDHE for approval. Prior to performing the risk assessment, the Respondent(s) must submit a baseline risk assessment work plan that provides, at a minimum: a site-specific conceptual exposure model which either graphically illustrates or states the impacted media and all the primary and secondary exposure pathways; and lists all contaminants of concern; standard exposure parameters; land use assumptions; methodologies for determining reasonable maximum exposure point concentrations; proxy determinations; and other statistical considerations. The BRA shall be conducted in compliance with the NCP and should be performed in accordance with “Risk Assessment Guidance for Superfund” EPA/540/1-89/002 and other associated guidance such as “Dermal Exposure Factors Handbook” and OSWER Directive, “Standard Exposure Factors”. The work plan must be approved by KDHE prior to commencing the Baseline Risk Assessment. Upon submittal, KDHE will have the BRA reviewed by a qualified contractor at the Respondent’s expense. Alternatively, the Respondent may elect to have KDHE’s contractor perform the BRA at the Respondent’s expense. If KDHE’s contractor prepares the BRA, the Respondent will be allowed to review and comment prior to finalization by KDHE. Coordination with KDHE is required throughout the risk characterization and cleanup goal determination process.

FS REPORT:

Respondents shall submit a FS Report, which evaluates appropriate remedial alternatives as determined from information gathered during the RI. The FS Report shall include: 1) a brief summary of the findings of the RI and the BRA; 2) a description of the site-specific RAOs; 3) a detailed description of each remedial action alternative evaluated, one of which must be the “No Action” alternative; 4) a detailed discussion of the evaluation of each remedial alternative by the nine criteria described in 40 CFR § 300.430 (e)(9)(iii) of the NCP; 5) a recommended remedial action for the site (based on the results of the nine criteria evaluation); and 6) an appendix containing any background information or literature used to evaluate each alternative. As with the RI, KDHE will review Draft FS Report submittals and, upon satisfactory resolution of KDHE comments, KDHE will approve the Final FS Report.

COMMUNITY RELATIONS:

KDHE shall prepare a Community Relations Plan (CRP), in accordance with EPA guidance and consistent with 40 CFR § 300.430(c) of the NCP. KDHE shall allow review of the CRP by Respondent(s) prior to final approval. KDHE and the Respondent(s) shall jointly implement the approved plan. To the extent practicable, the CRP must be in place prior to implementation of on-site field activities.

CORRECTIVE ACTION DECISION (CAD)

After approval of the Final FS Report, KDHE shall prepare a Draft Corrective Action Decision (CAD) stating the preferred proposed remedial alternative as concluded from the RI/FS study. The Draft CAD shall support the selection of the preferred remedial alternative(s) by documenting the following: 1) how the remedy was selected; 2) how the remedy eliminates, reduces, or controls exposures to human and environmental receptors through reduction of mobility, toxicity or volume of site contaminants; 3) how the remedy meets federal, state and

local remedial requirements, ARARs and remedial action objectives; and 4) discussion of remediation goals.

KDHE shall publish a notice of the availability of the Draft CAD and provide a public comment period of 30 calendar days. The notice shall include an agency contact person and address, for the submission of written and oral comments on the Draft CAD. As provided in 40 CFR § 300.430(f)(3)(i) of the NCP, the administrative record for the site shall be available for public comment and review at an appropriate accessible public location (library, KDHE office, etc.) during the 30-day public comment period. A public meeting will be held during the public comment period at or near the site regarding the preferred remedial alternative. A transcript of the meeting shall be prepared for the administrative record.

A Final CAD shall be prepared by KDHE that includes KDHE's explanation for any significant differences between the Draft CAD and the Final CAD as well as a responsiveness summary to the public comments.

KDHE/BER strongly recommends that any persons performing Remedial Investigation and/or Feasibility Study activities with State of Kansas oversight obtain and familiarize themselves with the following documents. These documents provide guidance for the preparation, implementation, and reporting of RI/FS activities, and constitute much of the technical basis on which KDHE/BER reviews work plans, reports, and other submittals related to the RI/FS process. This list is not intended to be exhaustive and KDHE notes that other guidance documents may also be useful in this process. Information on obtaining the EPA documents is available on-line at <http://www.epa.gov/epahome/publications.htm>. Information on the State Cooperative Program administered by the Remedial Section of the Bureau of Environmental Remediation can be found on-line at the KDHE web site, http://www.kdheks.gov/remedial/state_remedial_unit.html.

EPA/600/R-98/018 February 1998; "EPA Guidance for Quality Assurance Project Plans (EPA QA/G-5)."

EPA/540/G-89/004 (OSWER Directive 9355.3-01) October 1988; "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA."

EPA/600/R-96/055 August 2000; "Guidance for the Data Quality Objectives Process (EPA QA/G-4)."

EPA/540/1-89/002 December 1989; "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part A)."

EPA/540/R-92/003 December 1991; "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals)."

EPA/540/R/00/002 (OSWER 9355.0-75) July 2000; "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study."